

**WHAT IS CLAIMED IS:**

1. A duo-binary optical transmission apparatus, comprising:
  - a light source for outputting a light carrier;
  - 5 an optical modulator for modulating the light carrier according to a 2-level data signal;
  - the optical modulator comprises:
    - a code converter for converting the 2-level data signal into a duo-binary signal;
    - 10 a driving signal generator for receiving the duo-binary signal and generating a modulator driving signal;
    - a light intensity modulator for receiving the modulator driving signal, for converting a phase of the light carrier, and for outputting a modulated optical signal; and
    - 15 an optical band pass filter for receiving the modulated optical signal from the light intensity modulator, for filtering the modulated optical signal to be suitable for a predetermined band, and for outputting a duo-binary optical signal.
2. The duo-binary optical transmission apparatus of claim 1, wherein the light intensity modulator is a Z-cut dual armed light intensity modulator.
- 20 3. The duo-binary optical transmission apparatus of claim 1, wherein the light intensity modulator is an X-cut dual armed light intensity modulator.

4. The duo-binary optical transmission apparatus of claim 1, wherein the characteristic of the output signal of the wide band pass filter is varied according to a bandwidth of the wide band pass filter.

5        5. A duo-binary optical transmission apparatus, comprising:

- a duo-binary precoder for encoding a 2-level data signal;
- a pair of driving amplifiers coupled to receive the output of the duo-binary precoder;
- a laser light source for outputting a light carrier;
- 10      a light intensity modulator for modulating the light carrier according to the 2-level data signal; and,
- a wide band pass filter coupled to receive the output of the light intensity modulator to generate a duo-binary optical signal.

15      6. The duo-binary optical transmission apparatus of claim 5, wherein the characteristics of the duo-binary optical signal are varied by controlling an applied voltage and a bandwidth of the wide band pass filter.

7.        7. The duo-binary optical transmission apparatus of claim 5, wherein the wide band pass filter is further operative to filter the modulated light signal to be suitable for a predetermined band.

8. The duo-binary optical transmission apparatus of claim 5, wherein the pair of driving amplifiers is configured to apply 3-level signals to the light intensity modulator.

9. The duo-binary optical transmission apparatus of claim 5, wherein the 5 light intensity modulator is a Z-cut dual armed light intensity modulator.

10. The duo-binary optical transmission apparatus of claim 5, wherein the light intensity modulator is an X-cut dual armed light intensity modulator.

10 11. The duo-binary optical transmission apparatus of claim 5, wherein the light modulator is further operative to convert a phase of the light carrier.

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